

JC10 Rec'd PCT/PTO 19 MAR 2002

IN THE CLAIMS AMEND

1. Electromagnetic actuator for actuating a gas exchange valve [(10)] having an electromagnet [(1)] for closing the gas exchange valve (closing magnet) and an electromagnet [(2)] for opening the gas exchange valve (opening magnet), having a corresponding armature [(3)] actuating the gas exchange valve [(1)] and with oppositely directed spring forces [(6, 9)] acting on the armature [(3)], which set the armature [(3)] in an intermediate position between two end positions without actuating an electromagnet [(1, 2)], wherein the armature [(3)] is at least kept in the vicinity of the poles [(2c)] of the electromagnets [(1, 2)] by means of the electromagnets [(1, 2)], wherein the armature [(3)] is pivotably supported around a pivoting axis [(4)] and wherein the distance of the actuation point onto the gas exchange valve from the pivoting axis [(4)] is larger than the distance of the center of the armature from the pivoting axis [(4)] (transmission ratio =  $I_2/I_1 < 1$ ),

characterized in that,

- the armature [(3)] is formed in such a way, that the center [(middle 3b)] of the armature portion arranged opposite to the opening magnet [(2)], lies closer to the pivoting axis [(4)] than the center [(middle 3b)] of the armature portion arranged to the closing magnet [(1)] and that the poles [(1c, 2c)] of the electromagnets [(1, 2)] are arranged to lie opposite to these armature portions.

2. Electromagnetic actuator according to claim 1,  
characterized in that

at least one of the armature portions is formed as an immersion armature with immersing armature portions [(13a, 13b)].

3. Electromagnetic actuator according to claim 1 [or 2]

characterized in that

the armature portion arranged to the opening magnet [(12)] is formed as an immersion armature [(13a, 13b)] and that the armature portions [(13a, 13b)] immersing in the electromagnets [(12)] lie closer to the pivoting axis [(4)] than the pole ends [(12c)] of the yoke [(12a)] of the electromagnet [(12)] arranged to these immersing armature portions [(13a, 13b)].

4. Electromagnetic actuator according to [one of the claims 1 to 3] claim 1,

characterized in that

a flat armature [(3)] is arranged to the closing magnet [(1)] or in that the closing magnet [(1)] comprises a flat armature.

5. Electromagnetic actuator according to [one of claims 1 to 4] claim 1,

characterized in that

at least one rolling member bearing [(15)] is provided for the pivotable support.

6. Electromagnetic actuator according to [one of claims 1 to 5] claim 1,

characterized in that

the armature [(3)] and/or the yokes [(1a, 2a)] are formed from stamped parts.

7. Electromagnetic actuator according to [one of claims 1 to 6] claim 1,  
characterized in that  
the yokes [(1a, 2a)] are adjustable relative to the armature [(3)].

8. Electromagnetic actuator according to [one of claims 1 to 7] claim 1,  
characterized in that  
the electromagnets [(1, 2)] have the form of an E or E/U.

9. Electromagnetic actuator according to [one of claims 1 to 8] claim 1,  
characterized in that  
the electromagnet for opening the gas exchange valve is two-poled.

### REMARKS

Applicant respectfully submits that all amendments were made solely for conformance with U.S. practice, namely the removal of reference numbers and to remove multiple dependencies. All such changes have been made prior to substantive U.S. Examination and not in view of any prior art.

Upon entry of the foregoing, the application is in condition for substantive examination at the present time.